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MARCH-APRIL 1980
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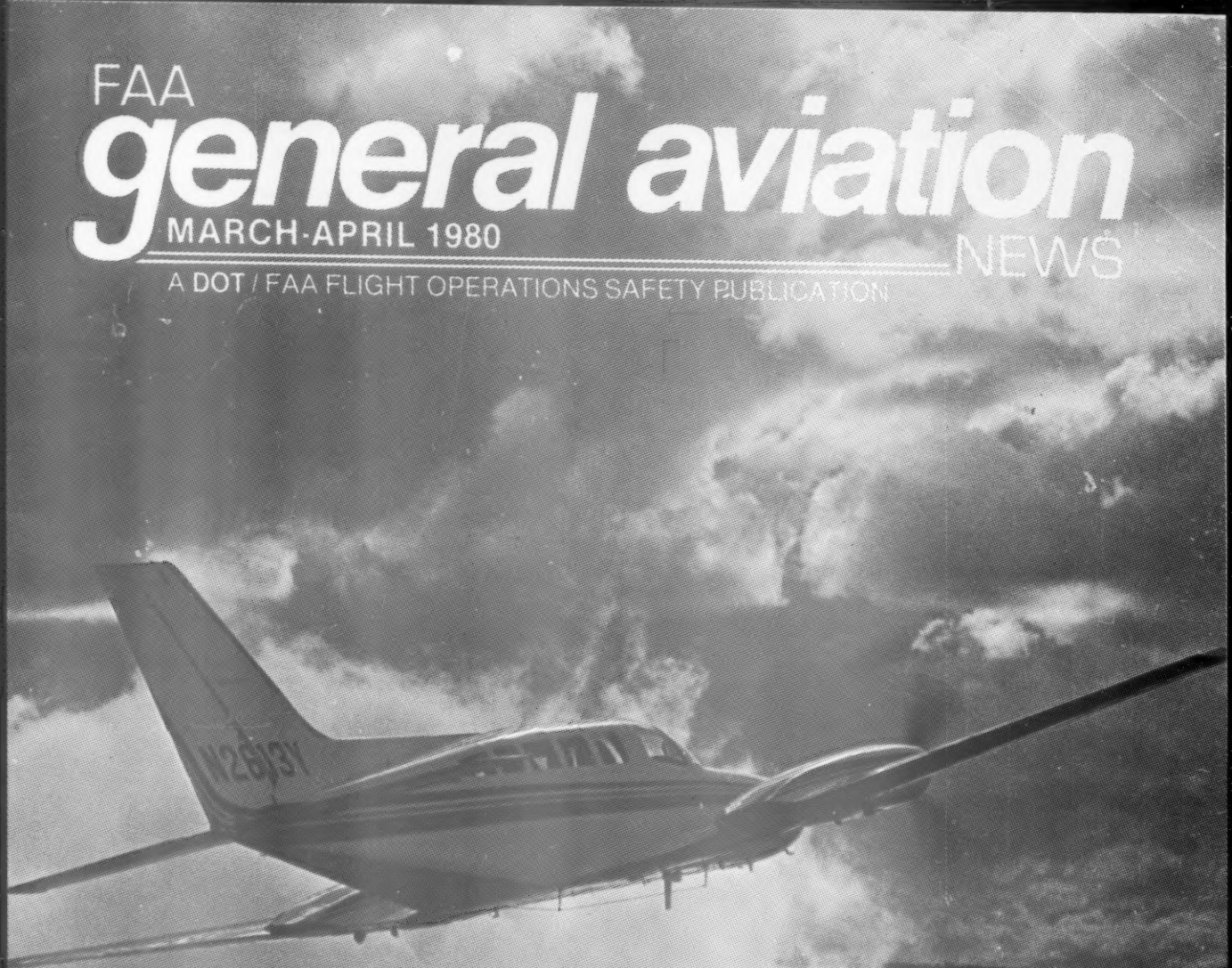

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FAA GENERAL AVIATION NEWS

DEPARTMENT OF TRANSPORTATION/ FEDERAL AVIATION ADMINISTRATION

MARCH-APRIL 1980
Volume 19, Number 2

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BRIEFS

YOUR BROTHER'S KEEPER? An upward trend has been noted in accidents involving student pilots carrying passengers. The regulations that forbid this practice are sometimes taken lightly, with fatal consequences. In a recent accident in Arizona where the student pilot was killed and his passenger crippled, several persons at the airport knew of the student's intentions before the flight but took no action to notify FAA. Illegal flying is a hazard to everyone in the community. Pilots especially cannot afford to look the other way.

AIDS YES, CRIBS NO. Persons taking written tests for airman certificates are allowed to use navigation computers and plotters, rulers, protractors, and also electronic calculators under the supervision of the tester. However, the use of any aid that has information on it that is not part of its function is not permitted. Guidelines are provided in Advisory Circular 60-11A (Aids Authorized for Use by Airmen Written Test Applicants), available free from the DOT Publications Section, M-443.1, Washington, DC, 20590.

SWB DISCONTINUED. The hourly Scheduled Weather Broadcast reports from VOR's and NDB's with voice capability have been discontinued from all FAA facilities except those in Alaska, effective April 1, 1980 (no fooling). Alternate sources of weather reports are those made randomly from navigational facilities, the En Route Flight Advisory Service at selected FSS's, and the Transcribed Weather Broadcasts over low-frequency NAVAIDs and VOR's.

SAFER SAFETY BELTS. Higher standards for seat belts go into effect as of December 4, 1980. After that date, metal-to-metal latching belts will have to be installed on all standard category certificated U.S. aircraft. Inspectors will be checking for the new type belt in annual and 100-hour inspections.

PARLEZ VOUS FRANCAIS? If you are planning any vacation or business flying into Quebec, Canada, you might want to brush up on your French. Quebec is predominantly French-speaking, even in the control tower. The radio transmissions you might be listening in on near a terminal could be of little use unless you know the language. For your own transmissions, of course, you can always use English.

WASHED OUT BY PROP WASH. Sharing an airport with jets and turboprop aircraft can be a pain, as one Cessna 172 pilot found out recently when he was cleared to taxi behind a Coast Guard C-130 at Concord, CA. The 130's prop wash lifted the 172 up and flipped it over. The pilot and passenger were slightly injured but the Skyhawk was substantially damaged. You can request ATC to have any heavy airplane you have to taxi behind ''throttle back;'' however, you should first make every effort to taxi far enough behind a heavy or in such a manner that prop wash or jet thrust is either dissipated or directed away from you.

Clean Springing

Looking for Trouble in the Landing Gear

The flowers that bloom in the spring (at last!) are a reminder, to the concerned aircraft owner, of the annual wash-down and scrub-up he has been promising his pet bird for many a week. With warmer days at hand it is time to clean off the muck and grime of another winter and inspect the airframe to see how well it is prepared to handle a new season of flying. Cleanliness may or may not be next to Godliness, but it has a miraculous way of bringing to light all kinds of hidden or unsuspected weaknesses in the aircraft that should be attended to before the first flight of spring. One area that often gets overlooked in these wash-down/inspection rites is the undercarriage.

The pilot may dutifully hose off the landing gear but he may not take the time to get down underneath the airplane and carefully inspect its underpinings—perhaps this is because it means assuming an uncomfortable position and maybe getting one's hands or clothes soiled. But it is important.

The tires, for example, can undergo significant changes over the winter, even if the aircraft is not flown. Cold weather does no harm to rubber, but dampness promotes rot. Fuel, hydraulic fluids and many aviation solvents will cause rubber to disintegrate; even the fumes are harmful, so it is a good idea to remove such materials from hangar floors, where planes are stored when possible.

Ozone, which is produced from a variety of sources (fluorescent lights, electric motors, battery chargers, generators, welding equipment, etc.) also promotes rapid aging of rubber. Look over the sidewalls carefully for evidence of weather checking, or ozone cracking. You may have to scrub the rubber first to get a good look. Any damage that exposes body cords usually indicates the tire is unsafe to fly with, and is probably ready for the scrap heap.

Although heat and friction are the primary causes of normal tire wear, cold weather landings are a potential source of *immediate and severe* tire damage, because of the prevalence of pot holes or paving cracks in freezing climates. Striking sharp edges of any kind can cause excessive tire flexing and allow sidewalls to become crushed by the wheel flanges. This is especially likely when the tires are underinflated, as is frequently the case in winter. Since tire pressure varies according to temperature, losing one psi for every 4° F. drop, tire manufacturers recommend that pressure be checked with a gauge before each flight. (This chore should be done outdoors, not in a heated hangar.) One hard impact against broken pavement can ruin an underinflated tire.

Spring is also a good time of the year to decide whether you are going to get through another summer of flying on the same set of treads. Make sure that you have enough tread left to prevent wear on the cord body. Significant degrees of uneven wear developing on the main gear tires could induce swerving on wet runways. Be on the lookout for any small foreign objects that may have worked themselves into the tire; if ignored, sooner or latter they will cause trouble.

The landing gear hardware itself, whether of spring steel or pressurized strut design, also needs to be thoroughly cleaned in order to be properly examined. A hose and a brush and patience will usually remove all the mud, sand, debris, etc. that has accumulated; avoid solvents that are not approved by the manufacturer (or your mechanic), for the reasons given earlier.

On inspection of the hardware you will be looking chiefly for cracked metal parts, loose or bent connections, and improper strut extensions. Having someone gently rock the wing (fore and aft, as well as vertically) while you examine the gear will help reveal any excess play in the fittings. See that all bolts and nuts are secure and properly safetied.

Nose and tail wheels may have developed problems arising from their steering function. The shock strut of most nose wheels has a cam locking device which automatically returns the wheel to a straight-ahead position when the airplane is not airborne. A defective cam is indicated if the wheel remains turned to one side when weight is taken off the wheel. Many tail wheels have a manual locking mechanism which is essential for controllability on takeoff, and which can be checked with the tail raised. The control horn and linkage of the steering mechanism of tail wheels also should be checked for freedom of movement and for security of the attach points.

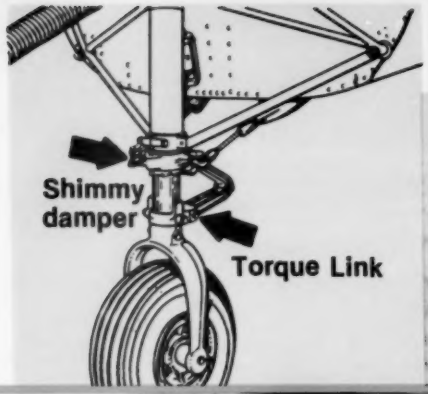
Shock absorbtion on nose wheels and most main landing wheels is accomplished by means of a telescoping tube, which compresses a fluid against air. Look for leaks around the seals and at the hose attachment points, flex coils, and connectors. Check for uneven or improper extension of the struts. Follow the manufacturer's instructions when replenishing the fluid and air pressure charge in the shock absorber.

The wheel wells of retractable landing gear also need a periodic cleaning with a hose, and this is a good time for the owner to have a look at its operating condition. Before you crawl under the airplane, make sure the gear indicator lights are showing down and locked. And you might want to lock the cockpit, to make sure no one fools with the controls while you are lying face-up under the belly. Inspect for leaks, loose connections, unsafetied bolts, and any indication of wear from misalignment of moving parts. If you can have the airplane jacked up by a mechanic, you can cycle the gear check to the closing and fit of the well doors.

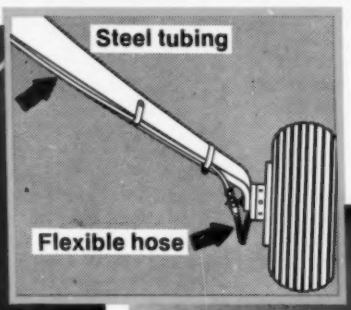
If yours is one of the older types of airplanes which use woven rubber cords or rings as shock absorbers, look these over for fraying, loss of elasticity, or deterioration. Oil or fuel drippings will shorten their life. The cords are color coded to indicate the year of manufacture, with one color thread usually indicating the first half of the year of manufacture, and two threads the second half. A maintenance shop will have the manufacturer's color code tables.

Simple, preventive maintenance which can be performed by an owner includes: removing and installing tires, replacing elastic shock cords and rings, servicing shock struts with fluid and air, cleaning and greasing wheel bearings, replacing safety wires or cotter pins, and lubrication of the gear.

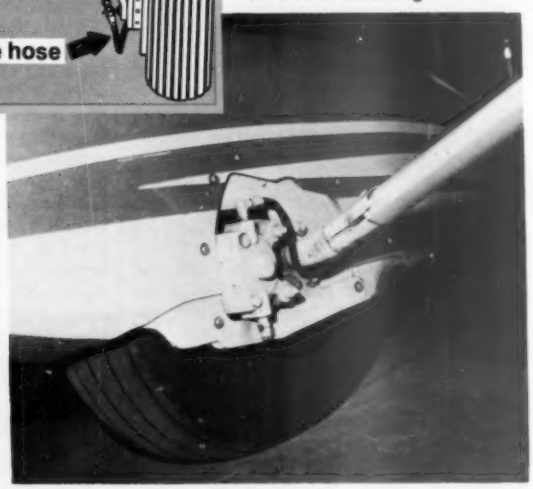
More serious problems, of course, must be dealt with by a qualified mechanic, but if the pilot/owner bird-dogs the trouble without waiting for the annual inspection he may save himself a lot of good flying time and money as well. A good close look at the landing gear and tires on the first preflight of spring can help keep the bottom from falling out of the season's inaugural flight. □



Defective nose gear (fixed) torque link could lead to bottoming out and curled props. Fairings should be removed for a closer examination of wheel.

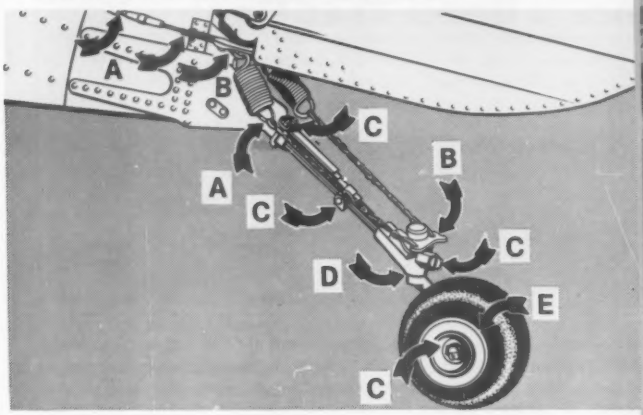


Brake fluid steel tubing connects to a flexible hose near the wheel. Repeated landing shocks can crack the flexible section. Check for leaks after cleaning.



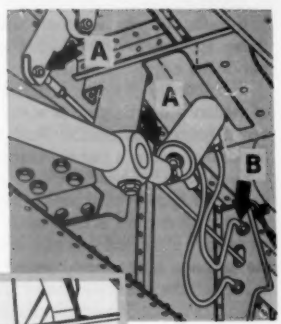
Retractable nose gear are basically the same as fixed gear but have more attach points to check. Landing light, frequently on the shock strut, should be examined for function & wire condition.

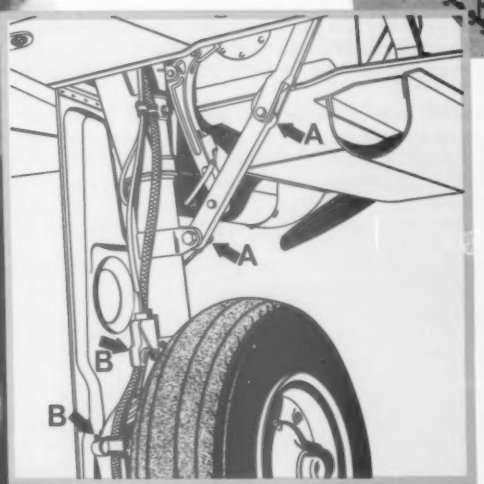
On a steerable tailwheel, inspect steering cables for tension and wear. Check security and safetying of nuts and bolts (C), and wear on horns (B). Look for cracks in wheel rim (E). The swivel (D) must move freely and be well-oiled.



Grime on gear can mask defects. Tires worn no more than 70% can be retreaded unless they have other visible damage.

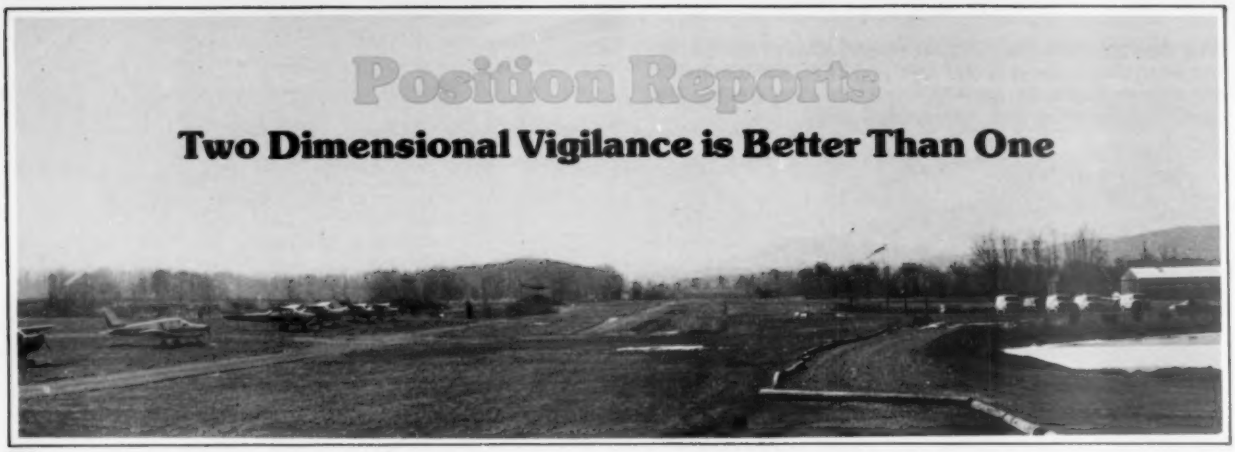
Retractable main gear has numerous attach points (A) to check. Inspect hoses (B) for leaks or crimping during retraction. Check the wheelwell for chafed areas which indicate gear is rubbing and may jam or lock inadvertently.





Position Reports

Two Dimensional Vigilance is Better Than One



The midair collisions and near misses which make headlines in the newspapers usually occur at busy airports with a mix of large and small airplanes. But San Diego notwithstanding, the fact is that most midair collisions occur *between general aviation aircraft at small, uncontrolled airfields* where traffic density is not a problem. National Transportation Safety Board files show that over the two year period 1977–1978 there were 66 midair collisions between general aviation aircraft, of which 33 took place in the traffic pattern at an uncontrolled airport. Thirty of these accidents occurred during landing or approach to land.

Weather was not a problem in any of these accidents, and most of the 60 pilots involved in the landing accidents had considerable experience. Only four were students; the others held private, commercial, or ATP certificates.

If traffic density, weather, and pilot experience are not the factors in these accidents, why do they occur? Possibly because of an overdependence on visual contact.

The scarcity of traffic at some airports in itself seems to promote lack of vigilance on the part of some pilots: what the eye does not expect to see it sometimes misses. And the rural background of some country airports provides a natural camouflage at certain seasons.

Even with the best of visual acuity there are certain relative positions or "blind spots" from which aircraft are hidden from one another, especially when one is high wing and the other low wing. Concern with perfecting a pattern procedure tends to concentrate one's attention on the airspace immediately ahead, or on panel instruments, and possibly to neglect the areas overhead and below or behind. Pilots who customarily fly only out of controlled airports often become used to having traffic separated by the control tower, and are lax in assuming this additional responsibility.

Another contributing factor is the fact that airport traffic patterns do not make up a fixed track, like a race course, but vary in width and length according to aircraft and pilot, as well as wind speed and direction. Although recommended pattern altitudes may be posted in the airport, strict compliance is not always the case. Vertical collisions are the most common form of midair accident. A recent accident in the southwest is typical:

On the morning of September 28, 1978, a Thursday, a rented Piper *Cherokee* departed Mangham Field, near Fort Worth, TX on a cross-country flight to Giddings, TX. On board were the pilot, his wife, and another passenger. They arrived without incident, and returned to Mangham that same afternoon, reaching the airport traffic pattern at approximately 4:45 p.m. They entered the pattern on the downwind leg for runway 35, an asphalt strip 2,550 feet long.

A second *Cherokee* entered the pattern at about the same time, with an instructor and a student pilot on board, returning from an hour of flight training. According to his later statement to National Transportation Safety Board investigators, the flight instructor announced his position over the UNICOM frequency (122.8) on downwind, on base, and on final approach. He said that he monitored UNICOM during the entire sequence and heard reports of other aircraft at other airports, but heard nothing about Mangham. Nor did he have any awareness of other aircraft in the pattern until just before impact: "We were in a stabilized glide at about 75 knots . . . when the other aircraft suddenly appeared in our lower left windshield, moving from left to right in front of us, not more than thirty or forty feet away and closing. I pulled up and to the right instantly but could not avoid contact."

The leading edge of the instructor's *Cherokee* collided with the right horizontal stablizer of the lower aircraft. The instructor was able to retain control of his airplane and complete the landing. The other *Cherokee* crashed out of control, about one-quarter mile from the runway. All three persons on board died of injuries.

One witness on the ground had seen two low-wing airplanes flying south at about 4:50 p.m., one at an altitude of about 700 feet AGL, the other at about 200 AGL. A second witness observed the two planes flying one above the other from the downwind leg on to final. He stated that the upper aircraft was slightly behind the lower plane. A third witness (a pilot) who also observed the two airplanes positioned one above the other said that the lower airplane appeared to be at a lower-than-normal altitude for the base leg.

Examination of the crashed airplane disclosed that one communications radio was tuned to UNICOM, but the switch was in the OFF position.

Since the same UNICOM frequency may be serving half a dozen or more airports within a receivable range, it is important to remember to preface your position reports with the name of your airport, and to give the number of the runway you are using. (Occasionally two airplanes will commence a takeoff run from opposite ends of the same strip at the same time.)

Pre-takeoff radio calls help avoid surprises at apparently inactive airports.

UNICOM is not intended as a substitute for FAA's Air Traffice Control System, and the operator has no authority to separate traffic or vector aircraft. The ground radio is most helpful when it is manned by an experienced pilot, perhaps the airport manager or a fixed base operator or instructor pilot; but at any given moment it could also be operated by a non-flying relative or employee of any of the above whose only connection with the airport is to serve hamburgers at the coffee shop or clean the restroom. You should not expect a flight service station type of briefing. What you can reasonably hope—and ask for—are simple items such as active runway, pattern direction, if not indicated, and traffic in the pattern. The reliability of the information you get is not as important as the fact that you are tuned into a radio frequency which other pilots flying the area are also likely to be listening to or speaking on.

The common UNICOM frequencies for uncontrolled airports are 122.7, 122.8 and 123.0. The frequency for a specific airport is shown on sectional charts (in boldface italics next to runway length—no listing usually means no UNICOM or that the frequency information was not made available to the cartographers). See also FAA's Airport/Facility Directory. Check the NOTAMs for frequency changes or additions.

At airports where there is no functioning UNICOM or at times when it does not function, pilots are advised to transmit their intentions over the radio "in the blind," even where no other aircraft activity can be seen. Continue to transmit position reports whether or not there is a response; someone with receiver-only capability may be listening—and watching. Transmit and listen on 122.9, the air-to-air frequency assigned to general aviation.

Some pilots feel a little ridiculous about broadcasting in the blind with no reply, but it is a very cheap form of insurance that could prevent a tragedy. It is uncanny how the most deserted-appearing airport can, on occasion, sprout wings, in the form of some weather-beaten taildragger that was hidden behind an outhouse. Pilots often like to find a semi-abandoned airport for practicing landings, which is a fine idea as long as you remember to keep looking out for other aircraft and continue to broadcast position reports.

Recently a student pilot based at Phoenix was out flying one afternoon when he found what appeared to be an ideally quiet airstrip in the desert about 50 miles west of the city. The only other aircraft in sight was a partially dismantled *Stearman* biplane with no landing gear. There was no smoke coming out of the chimney on the roof of the little shack near the strip; no cars or people; not even a dog. But the sod runway looked firm and even, and the tattered remnant of a windsock indicated light winds straight down the runway.

After inspecting the field from the air and getting no response on the UNICOM frequency, the pilot landed, looked in the shack, which was locked, and then began a series of touch and go landings. There was not a cloud—or another airplane—in the sky, for the next hour.

But at approximately 4:30 p.m. a Cessna *AgCat* which had been spraying alfalfa approached the strip and made a standard downwind entry to the pattern—apparently just as the green and white 150 was lifting off from a touch-and-go. By this time there were long shadows over the sagebrush, and the conspicuity of both aircraft was diminished.

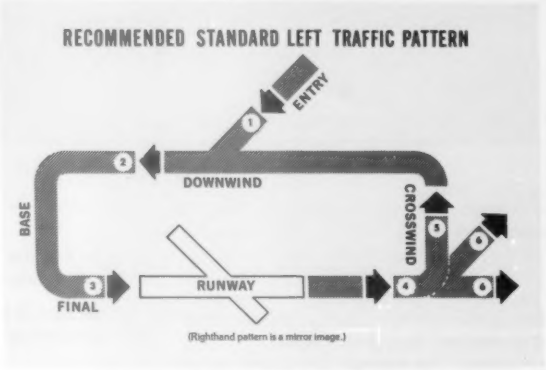
The student continued around the pattern at what he believed was normal pattern altitude but "could have been a little under." He stayed close to the runway with fairly short crosswind and downwind legs. The *AgCat* pilot made one radio call over 122.9 when turning base, and another when turning final, at which point his yellow biplane's landing gear struck the right wing of the *Cessna*, just inboard of the aileron. Both aircraft fell to the ground out of control. The *AgCat* pilot received only minor injuries; although his aircraft was demolished. The student pilot suffered a broken spinal vertabra. His statement indicated he had not used his radios at any point during his landing practice.

A pilot who is working to perfect a given maneuver, such as landing, tends to concentrate his attention on his performance and on the panel instruments, and he may neglect visual scanning. Radioed position reports are an important safety protection against the unexpected. In the accident cited above, neither pilot *expected* to encounter other traffic, but the cropduster knew enough not to rely on assumptions.

Position reports between aircraft, or air-to-ground, should be brief but explicit. Some details are important because the pattern legs at uncontrolled airports is not designed by FAA, and may vary according to local terrain, weather, aircraft type, and other factors. Some pilots habitually execute tight patterns, and others tend to swing wide. Some will make straight-in approaches. The straight-in approach is authorized for air carriers at an uncontrolled airport if it can be determined, through radio contact with a flight service station or radio operator at the ramp, that such an approach will not disrupt existing traffic. Using prominent landmarks in the report makes it easier for pilots to spot one another (". . . turning base near the red silo, turning final about half a mile out from the fence," etc.). It also eases matters for following aircraft when you give your color markings.

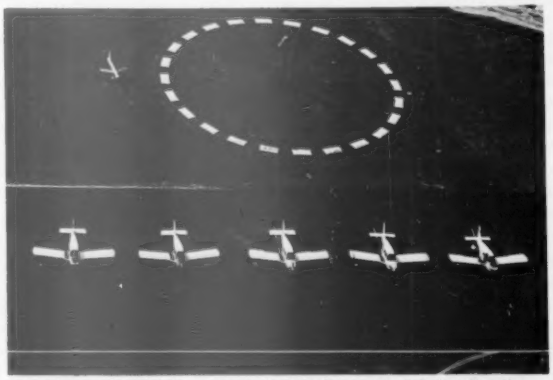
Orderly and safe traffic flow at uncontrolled airports is best assured when all pilots observe the standard traffic pattern and procedures recommended by FAA (unless indicated otherwise by airport officials). Recommended procedures include the following:

Figure 1.



Pattern Altitude 1,000 feet AGL

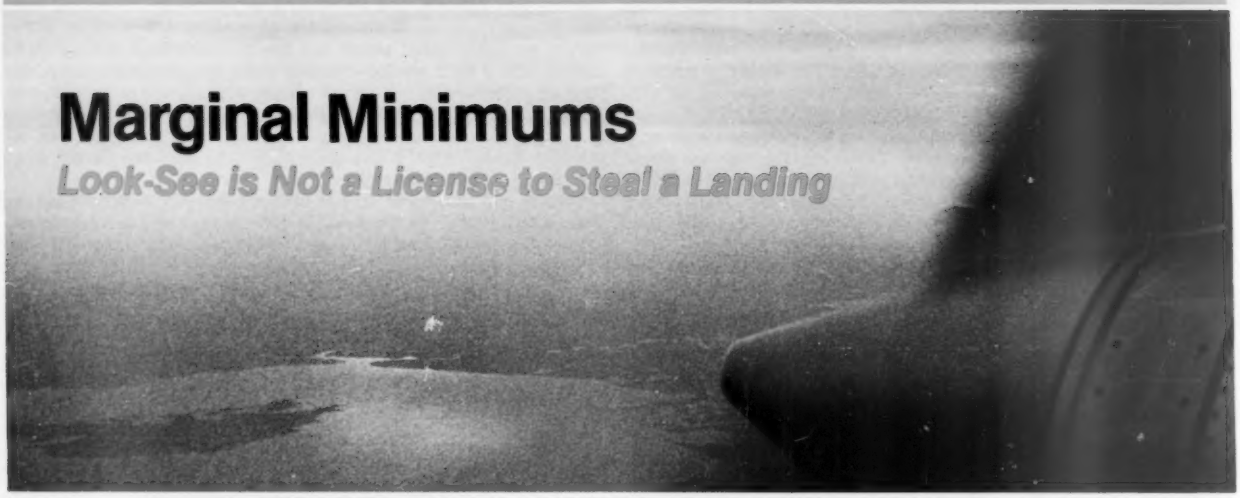
1. Enter pattern in level flight, abeam the midpoint of the runway, at pattern altitude.
2. Maintain pattern altitude until abeam approach end of the landing runway, on downwind leg.
3. Complete turn to the final at least ¼ mile from runway.
4. Continue straight ahead until beyond departure end of runway.
5. If remaining in the traffic pattern, commence to turn to crosswind leg beyond the departure end of the runway, within 300 feet of pattern altitude.
6. If departing the traffic pattern, continue straight out, or exit with a 45° left turn beyond the departure end of the runway, after reaching pattern altitude.
7. Note: It is important to level your wings after making 90° turns so as not to block out any traffic from your sight. □



Flashing amber light in segmented circle means righthand pattern..

Marginal Minimums

Look-See is Not a License to Steal a Landing



When pilots talk about stealing they do not always mean taking someone else's property. What they sometimes have in mind is taking a chance with their own or other persons' lives by attempting flight in weather when the cloud ceiling or the visibility is less than the legal minimums required for a given operation—"stealing a landing," for example. The penalty for an unsuccessful theft of this kind is very high, quite apart from FAA enforcement procedures. *Over half of the accidents that result from landings attempted with below-legal minimums have fatal consequences.*

A few pilots may brag about what they have been able to get away with, but they are playing a dangerous game—with loaded dice.

Sometimes pride is a factor—an unwillingness to admit one's inability to cope with the weather; sometimes it is sheer refusal to accept the rules as a necessary protective measure. It is not simply a question of experience. Most pilots who crash attempting a landing in weather that is below landing minimums have at least 1,000 hours of flight time and considerable instrument time.

A study of approach/landing accidents in general aviation over a four-year period (1974 through 1977) identified 99 accidents where below minimum operations were a major factor. About two-thirds of these accidents were of a "look-see" nature—the pilot initiating his approach in the absence of on-site weather data or when the weather at the destination airport was reported to be below landing minimums. While look-see is prohibited to air carriers or air taxi aircraft in the United States, it is a perfectly legal procedure for general aviation under Part 91. This is an inherently safe operation when carried out in accordance with the regulations. By the time the aircraft reaches the decision height (on a precision approach) or the missed approach point (on a non-precision approach) the pilot is required to discontinue the approach unless:

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(1) he has the runway environment clearly and continuously in sight; and

(2) the aircraft is now in a position to execute a normal landing.

At this point *judgement*, as well as experience and skill, is an important factor. The decision height or the minimum descent altitude and the location of the missed approach point (MAP) are determined for the pilot by FAA and are printed on the instrument approach chart for each airport. Separation from other IFR traffic is established for him through the approach clearance issued by air traffic control, but, of course, an ATC clearance is *never to be interpreted as approving the pilot's qualifications to land under existing weather conditions.* The decision to land or execute a missed approach is made in the cockpit, and this is where the trouble can begin, if the pilot decides to try "bending" the rules or mistakenly busts a minimum.

Apparently the temptation to land at the destination airport, even when this requires a little cheating, is difficult for some pilots to resist. The desire to avoid the inconveniences of an unscheduled landing at an alternate airport and perhaps an overnight stay away from home or a lengthy overland journey, frequently outweighs cold, hard facts. The eye imagines an opening in the clouds just below or ahead; the look-see is extended beyond the legal point by 50 or 100 feet and then another 50, and then—boom!

The safety margin of weather minimums for instrument approaches is not as generous as many pilots imagine. Some pilots entertain the erroneous notion that something like a 50% safety factor is added to all approach minimums, and that if you know the area you can shave the minimum considerably with no harm done—assuming you are unobserved.

Accident files show that most "stolen landings" take place at airports without control towers or at hours when the tower is not functioning. Thirty-eight of the 42 "below minimums" landing accidents reported by the National Transportation Safety Board for the 1977–1978 period occurred at non-controlled airports. In fact, 28 of these accidents occurred following a landing attempt without any ground radio contact at the destination point, such as UNICOM. In many cases the pilot apparently felt he knew the airport surroundings well enough to "feel" his way down without regard for the existing ceiling or visibility. In 35 of these 42 accidents the pilot was alone in the cockpit—with no one to assist him in continuing the approach under marginal conditions.

Single-pilot IFR, even for a look-see approach, can be perfectly safe as long as the pilot does not add to his normal burdens by delaying his go-around beyond the missed approach point, or by not preparing himself sufficiently in advance to execute this maneuver in accordance with the charts. With no one to call out altitudes for him, the pilot who does not have his airport clearly in sight well before reaching the MAP may become so wrapped up in trying to make out runway indications that he could slide far below his altitude minimum inadvertently.

A case in point involved a Beech 99 attempting to land at Bar Harbor in Maine. Bar Harbor is on the northern coast of New England, an area known for frequent morning fogs and low clouds. Hancock County-Bar Harbor Airport is located at the water's edge, directly across from the large island which includes Bar Harbor. It is approximately 33 miles southeast of Bangor and 189 miles northeast of Boston. The airport has two intersecting runways, with a localizer and a non-directional beacon approach to runway 22.

The 34-year old pilot of the Twin Beech Turboprop held an ATP certificate and had logged over 9,700 hours, including 2,500 hours in the aircraft he was flying that morning. As director of operations for a commuter airline, he was carrying out a short ferry flight from Bangor to Bar Harbor in order to position the aircraft for the day's flying schedule. There were no passengers or other crewmembers on board.

Departure from Bangor International Airport was at 6:13 a.m. on an IFR flight plan filed with Bangor Control Tower. The flight was cleared for the short hop at a cruising altitude of 4,000 feet, and the pilot was advised to report and hold at Surrey. (Surrey is a non-directional beacon used as the initial approach fix for the localizer approach to Hancock-Bar Harbor Airport.)

A clearance to begin the approach was radioed by Approach Control at Bangor Tower at 6:30 a.m.

The pilot replied, "Okay, we're out of four and we're inbound to Surrey on the procedure turn right. We'd like to shoot it straight in if we could."

Bangor transmitted approval.

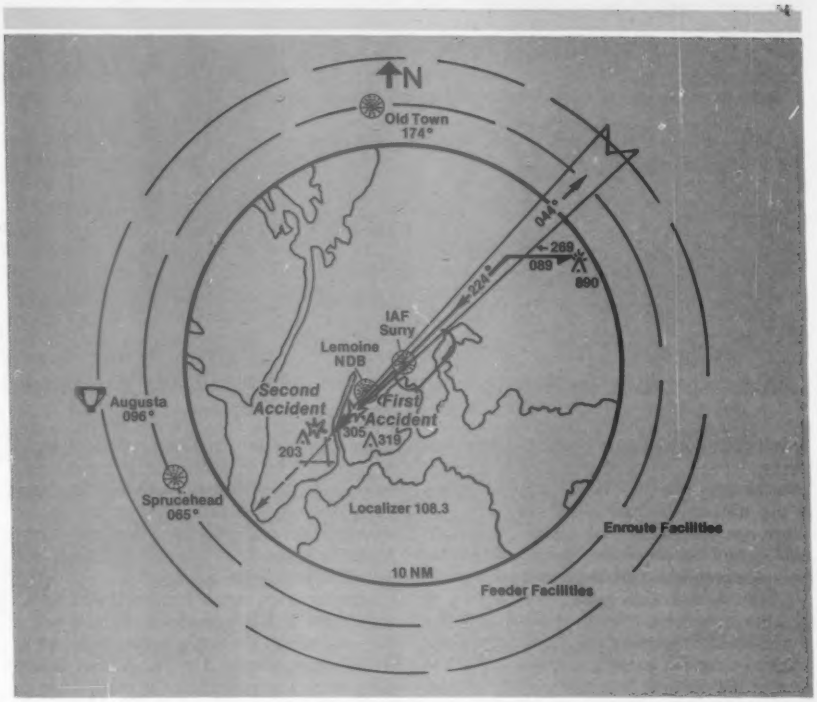
NAVAIDs for this approach consisted of the beacon at Surrey, 5.4 miles from runway 22's threshold, and a localizer situated beyond the departure end of the runway. A second non-directional beacon, "Lemoine," is located slightly west of the approach path and approximately two miles from the threshold, but Lemoine is not part of the localizer approach. The landing minimums for the straight-in approach in a Beech-99 were 580–1 (580 feet MSL, one mile visibility) when the Bar Harbor altimeter setting is available.

At 6:35 a.m. Bar Harbor weather was provided the pilot by a certified weather observer—an employee of the commuter airline: *Estimated 600 overcast, visibility one and one-half miles, fog, wind 190 at four, temperature 64 degrees, altimeter setting 29.82.* The airport elevation at Bar Harbor is 84 feet. The terrain is open and fairly level except for several small wooded knolls about 200 feet high.

According to the pilot's later statement, as reported by National Transportation Safety Board investigators, he passed Surrey NDB at 3,200 feet and leveled east of Lemoine at about 900 feet. Aircraft airspeed was reduced to 130 knots, and the gear was lowered. The pilot stated: "I resumed descent. Passed Lemoine NDB at 650 feet MSL, which was *last altitude observed* (Italics added). Less than five seconds later I came in contact with trees on top of a ridge."

The aircraft had crashed into a clump of trees atop of a 200-foot knoll, about one and three-quarters of a mile from the runway threshold. Luckily the impact had taken place on the backside of the hill, allowing the airplane to cut a path through the trees for a distance of 325 feet before coming to a rest. Although the plane was demolished, the pilot was able to walk away.

The weather preceding this accident was marginal. The pilot had the option, since the ferry flight was a Part 91 operation, to initiate the approach and have a look-see. But an *estimated* ceiling can be off the mark by 100 feet easily, and his own statement indicated that he descended through the minimum descent altitude without having the airport in sight.



The Bar Harbor VOR approach (Lemoine NDB added) and the two accidents sites.
(NOTE: This representation is not suitable for any navigational purpose.)

Furthermore, the pilot's statement indicated that at the time he descended below the minimum descent altitude he was in a high rate of descent, which would have made it difficult to complete a normal approach and landing, as required by regulations. Many instrument approaches, such as the localizer approach to Bar Harbor, have the missed approach point close to the threshold. With certain aircraft, and under certain wind conditions, if the pilot waits until he actually reaches the MAP before beginning his landing descent he may have to steepen his approach angle abnormally, perhaps resulting in an unsafe landing. In accordance with FAR Part 91.117, pilots are expected to discontinue the approach not only at the MAP or decision height, but at *any point in the approach when they are not certain that they can carry out a normally configured final descent.* The recent introduction of VDP, or visual decent point, was intended to help pilots realize they had reached the point at which final descent would normally be initiated, even though the MAP may be some distance off. VDP is a voluntary NAVAID and not available at all airports with instrument approaches, but many seasoned pilots use their own version of a VDP and initiate a missed approach whenever they perceive a possibility of overshooting the landing.

There is always the possibility of a mechanical failure or freakish weather condition occurring on final approach. The pilot who cuts his safety margin too thin and then finds himself beset with unexpected distractions could easily lose control of the aircraft or wander off course with calamitous results.

Something of this nature happened to the Beech 99 pilot two years after his first accident at Bar Harbor. Still chief pilot, he and another pilot were flying two company executives into Bar Harbor one foggy evening in May, again under marginal weather conditions. They had departed Bangor in a Cessna 402, when the measured ceiling was reported as 700 feet, with 1,000 feet overcast, visibility three miles in light drizzle and fog. At Bar Harbor the company weather observer estimated the ceiling as 600 feet overcast, visibility one mile in rain and fog.

Shortly after beginning the localizer approach to runway 22, the aircraft disappeared from the Bangor Approach Control radar screen. The 402 crashed one mile west of the airport and burned. There were no survivors. There had been no radio transmissions indicating trouble with the airplane, and no evidence of mechanical failure was found. But witnesses reported the aircraft as maneuvering at some length at a very low altitude, and the righthand propeller had been feathered. The Safety Board, once again, listed improper IFR operations as a probable cause of the accident.

The look-see privilege for instrument approaches has been criticized in some sectors as

Good airport approach visibility can be abruptly obscured by fast-moving ground fog.

opening the door to illegal operations, or at best putting into the hands of the pilot a responsibility he may not be able to carry out. *When is the runway environment clearly in sight? When can you see runway lights? The threshold? Airport buildings? An adjacent site? What if you see ground fog moving across the airport?*

Obviously individual judgement will vary as to what constitutes a legal and safe weather condition for any given approach in a given aircraft—even the immediate condition of the pilot at the controls is a factor. FAA believes that general aviation pilots are entitled to some flexibility in these decisions. More than half of the 1,727 airports in this country with instrument approaches have no weather reporting facility, and therefore could not be used by Part 91 operators in IFR weather if they were not entitled to a look-see.

General aviation pilots have traditionally been given a certain amount of leeway in flight operations. Normally they have their own best interests in mind and will not knowingly expose themselves to hazards by ignoring weather minimums. But weather conditions on an IFR approach can change suddenly and are often deceptive. Look-see means just that—a look at the weather conditions at the airport—it is not a back door around prescribed minimums. Abuse of the look-see could lead to a higher accident rate and possibly the loss of the privilege.

Various kinds of automatic weather recording equipment now under development and testing may in time offer pilots an additional means of determining whether a safe landing can be made at an airport that does not have a manned weather station. The automatic equipment transmits frequent or continuous observations, either over the VOR frequency or over a discreet frequency.

Eventual mass production should bring the price of automatic weather reporting systems within the budget of many general aviation airports and may result in lowering weather minimums for certain approaches.

The National Weather Sevice has installed AUTOB, a new automatic weather observing station at Fort Yukon, Summit and Unalaklett, Ak.; Del Rio, Tex.; Sandberg, Ca.; Wendover, Ut.; and Winslow, Az. There are some important differences in the means used by automated devices to observe weather, compared with human observors, which effect weather analysis and understanding. See the current Airman's Information Manual for an explanation of how AUTOB functions.

Approaches in below minimum weather are not limited to IFR operations. At least half of the accidents in the study previously cited involved attempts to land in IFR weather without using instrument procedures. In many cases the pilot held an instrument rating, but did not file IFR—either because the airport did not have an instrument approach, or because the pilot simply did not trouble to use the instrument approach and seek a clearance.

Just how many landings are "stolen" each year under these conditions is anyone's guess. Again, all we know for certain is that more than half of the accidents resulting from unsuccessful efforts to land in below-minimums weather are fatal. A typical VFR-in-IFR conditions accident occurred in Oak Ridge, La., on a recent foggy September night, bringing a sad climax to a holiday in Baton Rouge.

Five men, including three rated pilots, had flown to Baton Rouge early in the day in a Piper *Cherokee*, departing from a sod strip known as Barham, or Oak Ridge. Barham is a private strip with a single runway, 35–17, 2,000 feet long, in the middle of a cotton field, with runway lights and a simplified VASI (non-approved). It is a cropdusting base, with hangars and an operations office. The field is broad and open, with a row of trees about 1,000 feet on either side of the runway.

According to the National Transportation Safety Board report, the five men had flown the 150 miles to Baton Rouge to attend a football game, relax and have dinner in town. At 10:30 that evening the group returned to their airplane at Baton Rouge, called the tower for taxi instructions, and were cleared for takeoff a few minutes later. According to one passenger (the only survivor) the co-pilot had obtained a weather briefing by radio and told them "VFR weather was reported en route and radar indicated no en route weather problems." However, the FSS had no record of briefing this aircraft or providing weather information for a flight to Monroe at this time of night. Departure radar contact was terminated at 11:00 p.m., and the flight continued by way of Monroe VOR. (Monroe is located approximately 17 miles southwest of Barham.)

The terminal forecast for Monroe at midnight was *3,000 feet scattered variable broken, chance of thunderstorms.* However, the Monroe surface observations for 12:00 a.m. noted, *thin obscuration, visibility one and one-half miles. . . .* At 11:39 the *Cherokee* contacted Monroe Approach Control and was given the altimeter setting and wind information. Thirteen minutes later the aircraft crew reported their position as over Bayville (about eight miles south of Barham), and descending through 1,500 feet.

Final approach was normal, according to the surviving passenger, who stated that he could see the runway lights flashing by as the airplane rounded for the touchdown. However, just before the wheels touched the pilot said, "Let's get out of here!" He applied full power and began a go-around.

A few seconds later the *Cherokee*'s wing struck a tree to the left of the runway and slammed into the ground. There was no fire, but the crash was fatal to four of the five persons on board.

One observer at the scene theorized that the runway may have become obscured with fog at the instant of touchdown, and during the attempted go-around the airplane yawed off to the left because of uncorrected high torque. The airport manager, who was driving a truck near Barham at the time of the accident, testified that forward visibility at the surface was restricted "in the neighborhood of 300 feet because of the ground fog." He said he could not drive more than 15-20 mph. The accident investigation determined that this was a below minimums operation and noted that the weather was considerably worse than forecast.

No matter how good an approach looks at the start, VFR or IFR, bear in mind that cloud configurations are constantly changing and can wipe out your visibility abruptly. Ground fog is often very difficult to spot from the air at night. Never expect conditions at your destination to correspond exactly to weather reported 10 or 20 miles away. Remember, too, that altimeter settings can vary a few miles apart, under unusual weather conditions or in mountainous terrain.

Even an unofficial weather observation is usually better than none at all. Check with air traffic control for PIREPs, and if your destination airport has an active UNICOM, get what information you can from this source. If nothing is available, and conditions appear marginal or you are landing at night, you might want to consider landing first at the nearest controlled airport, telephoning a pilot friend who lives near the destination airport or the field's manager. Proceed only on very tangible reports and with caution. A look-see in the dark that discloses the presence of any nearby clouds is a pretty strong signal for you to go somewhere else in a hurry. In the words of one old-timer, "When in doubt, get the hell out." □

Not Quite as Good as I Thought

Takeoff . . .
Weather *not quite* as good as I thought.
It isn't *that* bad though . . .
It *could* get better.
It *should* get better.
It *has* to get better.
It *isn't* getting better . . .
It *could* be worse.
It *is* getting worse . . .
It's BAD!
It's very bad—no horizon.
It's *really* bad—the ground is gone!
I don't believe I'm in this . . .
I don't want to be in this!
SOMEONE GET ME OUT OF THIS!

There is no one to get me out of this . . .
Grey everywhere!
The engine is speeding up . . .
Pull back!! Go up!!
The altimeter is going the wrong way!?
Compass and gyro spinning . . .
Got to go the other way—which way?
Airspeed redline!?
Airplane SCREAMING!!!
There in the grey . . .
Black trees leaning *down* above my nose!?
I'm going up into them . . .
Big snow mounds . . . undergrowth . . . fallen branches . . . chewed up by the prop . . .
I shouldn't . . . . . .

Text by John V. Graff, National Weather Service,
Drawing by Carl L. Freson.

Ground Resonance

Unbalanced Rotors Can Give You a Fit

"Helicopters are different from airplanes," as a network newscaster once explained. "Not better or worse, just different."

Very true. Helicopters have certain idiosyncrasies, one of which includes throwing a self-destructive fit, under certain conditions of neglect and mismanagement. Technically known as "ground resonance," this is a phenomenon which can literally shake some helicopters apart.

Unrelated to ground effect, ground resonance is a violent interaction between a fully articulated helicopter and the terrain, which may take place under varying circumstances of takeoff and landing. When it occurs, the helicopter will begin to vibrate excessively, rocking on its landing gear so rapidly and violently that the pilot may be unable to take corrective action in time to avoid destruction of the helicopter. He is not likely to have any previous experience with ground resonance, except in discussions with an instructor or other pilots, and may not recognize what is happening until it is all over. The occurrence is infrequent, and to a large extent preventable.

Ground resonance will occur only to helicopters with fully articulated rotor systems, whose blades (usually 3 or 5) are free to move forward and backward and up and down, in addition to changing pitch. Dampers (or dampeners), a hydraulic or mechanical device similar in principle to a shock absorber, are designed to keep the blades from leading or lagging excessively. If the dampers malfunction, an unbalanced rotor condition may occur and could cause the helicopter to oscillate. Ground resonance is most likely to occur when the oscillating helicopter makes *uneven* gear contact—one gear touching the ground and the other still in the air—or lands on defective oleo struts. The result is the immediate dispersal of destructive vibrations throughout the airframe, and the helicopter destroys itself on the ground—a serious threat to life and property.

Recovery takes a quick reaction, since complete destruction can occur in a mere 30 seconds or less after the resonance begins. (Characteristically, because of its impact-resistant design, the cockpit area will remain structurally intact while everything else comes apart.) The pilot has two choices. He can attempt to become airborne or he can shut the engine down to stop the out-of-phase rotation, hopefully.

If ground resonance occurs on landing, there is usually enough rotor rpm to take off again, and once clear of the ground the resonance ceases. (However, since the continued presence of oscillations could create resonance again on a subsequent landing, a softer landing area which will absorb the vibration would be a good choice.) If the resonance problem begins on takeoff, there may not be enough rotor speed to become airborne, and since any attempt to increase rotor speed will increase resonance as well, engine shutdown is usually the best course of action.

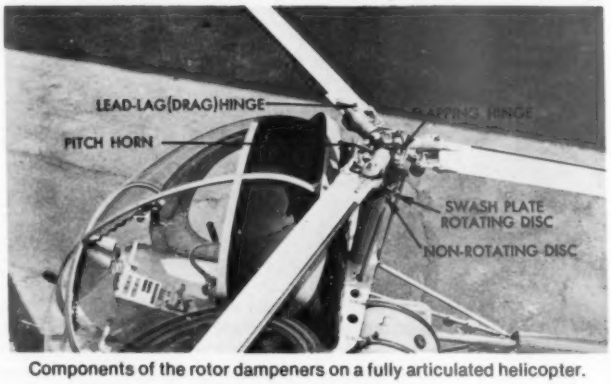
A fully articulated helicopter with malfunctioning rotor dampers is most susceptible to ground resonance if it has weak or unevenly extended landing gear shock absorbers. This promotes instability and the likelihood of uneven touchdowns when landing or taking off—as a pilot in Seattle, Wash. discovered recently to his grief.

He had noticed a low oleo strut on the rental helicopter he was about to fly, but accepted the owner's word that it only appeared uneven because of the slanting ramp. As he was preparing to take off the helicopter suddenly began to vibrate so violently that he was unable to reach the key in the panel switch and turn it off. The 'copter flopped around on the ramp as the rotor blades were distorted by contact and chewed up the fuselage. Although the cockpit remained intact, the pilot and his passenger were both hospitalized from bruises and back injuries.

Agricultural pilots who operate fully articulated helicopters from a flat bed truck are always a potential target for ground resonance. If the suspension system of the truck is too rigid to absorb any existing oscillations or too springy, so that the surface itself begins to vibrate with the helicopter, reinforcing its rocking motion, ground resonance may set in. Operating from ground which is very spongy or soft—as is often the case in springtime—can be hazardous for the same reason.

Pilot technique also plays a role in setting up conditions conducive to ground resonance. Any procedure which leads to prolonged single-point contact with the surface will certainly aggravate an oscillating condition—perhaps to the extent of producing ground resonance. This includes landing on a slope, hovering too low over uneven terrain, making run-on landings or takeoffs over rough ground, and raising the collective pitch too slowly or hesitantly on takeoff.

Good preventive maintenance is the key to avoiding the destructive experience of ground resonance. Insisting on proper inflation of oleo struts—and tires—is one good form of insurance. Another is the habit of checking damper action carefully by hand on every preflight, making sure that the rotors are not able to exceed a normal travel span. Full articulation of the rotors provides you with excellent helicopter performance capabilities, but trying to control the aircraft once ground resonance has started has been described as like "shaking hands with the devil." □



Components of the rotor dampeners on a fully articulated helicopter.

Fairchild

and the Camera That Gave Birth to an Airplane

How would you like to be born with a legacy that would one day be worth half a billion dollars? Add to this brains, good looks, and family connections in politics and society that made you, as a college youth, the target of New York's most desirable debutantes? Talk about being born *free* . . . all Sherman Mills Fairchild had to do was ease back and enjoy life. For some strange reason he chose, instead, to devote himself passionately to aerial photography, and in the process manage to introduce a new dimension to aircraft design.

Born on April 7, 1896, in the village of Oneonta in central New York, Sherman was the son of a Congressman and publisher who eventually became chairman of the board of IBM, Inc. The boy grew up on a wealthy country estate surrounded with marvelous playful gadgets, like miniature trains that ran around the grounds—and few human companions. His father was frequently away on business, and both parents made extended visits to Europe. Young Sherman early developed the habit of taking everything mechanical apart to see how it worked, and how it could work better. He entered Harvard in 1915 but transferred to Arizona U. because of recurring tuberculosis.

By this time American entry into World War I was at hand, and Fairchild, who had become interested in aerial mapping, tried to enlist in the Army Signal Corps. Turned down because of his T.B. history, the enthusiastic youth volunteered to work on his own to improve the aerial camera. At this time aerial photos tended to be distorted and indistinct, because the focal plane shutters in use were too slow in relation to the speed of the airplane moving over the target. No one had yet been able to design a successful between-the-lens shutter for aerial cameras.

With military blessing, Fairchild borrowed $40,000 and some facilities from his father and went to work. Eighteen months later he proudly displayed his new model, in which the shutter was inserted between the lens components, thus admitting more light during shorter exposures.

Other advanced features included an electrical film advancer and an "intervalemeter," a means of taking pictures at selected intervals. This Fairchild camera was destined to revolutionize aerial mapping, for civilian as well as military use. But in late 1919, a year after the war was over, a lean-budgeted Army was no longer interested in cameras and eventually paid for less than a fourth of the development costs.

In the fall of 1919, Fairchild entered Columbia University in New York City to continue studying engineering. He liked his studies, enjoyed living in the big city, listening to jazz and attending Broadway shows with a charming debutante on his arm. But he also wanted to prove the value of his camera, and early the following year he dropped out of college and formed the Fairchild Camera Corporation with $25,000 in assets.

Working with two associates, one a photographic engineer, Fairchild perfected his K–3 aerial camera and demonstrated it impressively for the Army Air Service. Within a year he had orders for 20 production units. He still lost money on the deal, but confidently expanded his company to a half-million dollar capitalization with some 40 employees—becoming the world's leading manufacturer of aerial cameras by 1923.

By this time Fairchild, who characterized himself as "half inventor and half entrepreneur," had opened up a vast commercial market for his cameras, pointing out the advantages of aerial mapping for city governments (who were able to tax hitherto unknown and unregistered property), real estate developers, highway and pipeline engineers, mining and agricultural interests, etc.

The company acquired several airplanes to take pictures, but Fairchild considered them all unsatisfactory. An aerial platform was needed, he felt, that did not expose the cameraman to wind and cold or buffet him about, shut off part of his view, produce excessive vibrations, or force him to land frequently for fuel. Pilot discomfort had long been considered a necessary condition of flight, which added to its heroic status, but Fairchild had no patience with sentimental or romantic images.

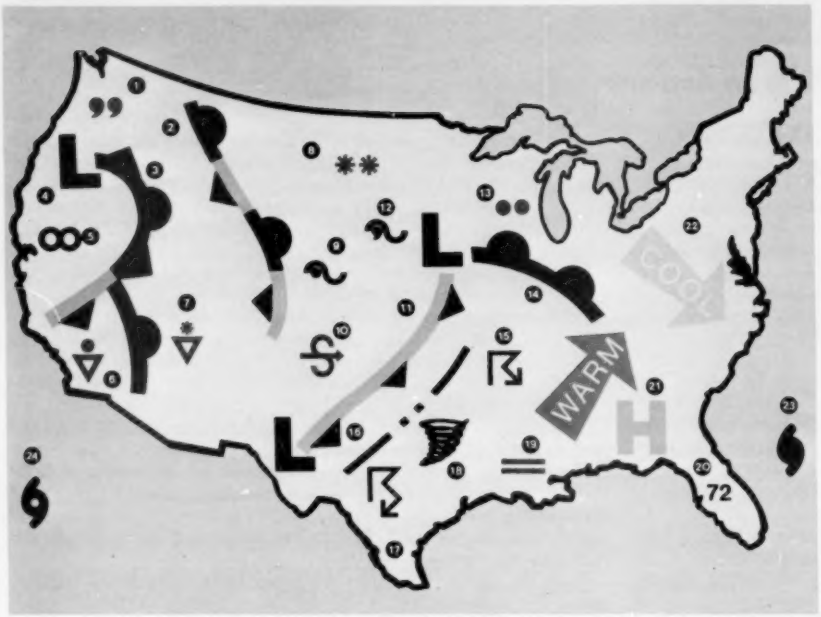
Determined at last to solve these problems for himself, he experimented by modifying several existing aircraft, adding more window glass, a "cabin" enclosure, openings in the floor for camera emplacement, and extra fuel tanks. After learning all he could from other designers he formed his own aircraft manufacturing company in August of 1925. His design goals included: greatly expanded visibility, high service ceiling, stability in turbulence, small field operation, long range cabin comfort, and ski/float conversion.

In June of 1926 the prototype FC-1, flown at New York's Roosevelt Field on Long Island, met all of these objectives. In addition, its semi-cantilevered high wing could be folded back, reducing the span from 44′ to 13′. In the improved FC–2 version it was powered by a Wright J–5 220 hp engine and weighed 3,225 lbs., with a useful load of 760 lbs. The roomy, heated cabin held four persons, plus pilot and baggage. Top speed was 119 mph, range 710 mi., service ceiling 14,750 feet.

The Fairchild aircraft was an immediate success, proving eminently suitable not only for aerial photography but also for carrying passengers and freight, for exploratory and patrol work, for advertising, and for dozens of other purposes no one had previously imagined. The age of the unstable open-seater was over. Orders poured in from all over the country and the continent, as fledgling airlines and air taxi companies mushroomed overnight.

From this success Fairchild went on to design some 50 aircraft in a career that spanned over a half century in aviation. Famous designs included the Fairchild 71, a six passenger plane with remarkable durability, built specially for bush flying; and the PT–19, a primary military trainer that was turned out by the thousands during World War II. Never a pilot himself, and despite little formal training, he exhibited a remarkable ability to "make things work" in aviation—to solve problems by approaching them directly and in complete confidence. ". . . never mind all the people who say you can't do it; just go ahead and figure out a way." His lively mind led him into many allied fields, such as avionics, semi-conductor technology, and aerospace for which he founded numerous new companies, but air-mapping remained a lifelong interest.

Fairchild never married and apparently never took a vacation, seeking his recreative inspiration in new undertakings, new challenges. Ideas apparently interested him more than people. Still chairman of Fairchild Camera and Instrument Corp. and Fairchild Industries when he died in 1971, at the age of 74, he had no relatives and his estate was divided between faithful associates and a foundation for scientific education. □



"AM WEATHER" EXPLAINED. The nationally televised program "AM Weather," which provides current and forecast weather information for airmen, has published a revised 24-page guide for interpreting the symbols and shading used in the daily weather program. Shown in the early mornings on 218 public broadcasting stations, "AM Weather" offers the national and regional weather picture, presented by National Weather Service meteorologists using PBS satelline photographs. The booklet is available for $1.00 from the Maryland Center For Public Broadcasting,Owings Mills, Md. 21117.

More Flight Experience Required For Commuter Pilots

Under new FAR 135.244, as of March 1, 1980 the pilot-in-command of any aircraft with a two-man crew, carrying passengers for hire, must have logged from 10 to 25 hours of flight time in that make and model airplane under the supervision of a qualified check pilot. The flight time required is based upon aircraft complexity: from ten hours for single-engine piston aircraft, ranging up to 25 hours for high-performance turbojets.

The new requirements, enacted as an emergency amendment to FAR Part 135, are intended to bring experience levels for commuter pilots more in line with those for certificated air carriers. Although the rule change became effective upon its announcement, public comments are being accepted until April 1, 1980.

The rule change was prompted by a study of 4 of 13 fatal commuter accidents in 1979 which indicated that the pilots involved, although high in total flight time, had as little as two hours flight experience in the make and model airplane they were flying at the time of the accident. Twenty-five people were killed in these four accidents alone.

Additionally, the rule revised FAR Part 135.105 to require that the pilot-in-command of a commuter aircraft approved for single-pilot, passenger-carrying operations with the aid of an autopilot must have a minimum of 100 hours of flight time in that make and model airplane before passengers can be carried for hire.

UNICOM Frequencies Changed at Fifteen Airport Areas

Over the next six to 12 months, UNICOM operators at uncontrolled airports in 15 areas in the United States will be changing frequencies according to an assignment plan developed by FAA and the Federal Communications Commission. (There are now three UNICOM frequencies available for assignment to uncontrolled airports: 122.7, 122.8, and 123.0.) The assignments are expected to reduce the number of uncontrolled airports using the same UNICOM frequency within the same reception area.

The areas scheduled for frequency reassignment are: New York/New Jersey; Washington, DC/Maryland/Virginia; Atlanta; Chicago/Milwaukee; Cleveland; Los Angeles; Denver; Cincinnati/Dayton/Columbus; Seattle; Detroit/Toledo; Indianapolis; Houston; Dallas/Ft. Worth; Pittsburgh; and Boston. Pilots are advised to check directly with airports or with their associated Flight Service Station for the current frequency, since the Airport/Facility Directory and aeronautical chart information will lag behind the changes during the transition period.

UNICOM operators not affected by the assignment plan who are encountering frequency congestion can change to one of the other two frequencies upon request to FCC.

(See "Position Reports" on p. 6 of this issue for a related article.)

Pilots Cautioned on Quinine

The Armed Forces Institute of Pathology has cautioned pilots against intake of quinine in any form, including quinine and tonic water drinks, until studies can be completed to determine if it is harmful to a pilot's sense of equilibrium. Accumulation of quinine in the fluid of the inner ear has been associated with disorientation.

The Institute began its clinical studies after an autopsy of a pilot killed in a recent crash revealed quantities of quinine in his tissues, and further investigation showed the pilot drank large quantities of tonic water daily.

Petition on Pesticides

The *Friends of the Earth*, a national environmental group, has petitioned FAA to begin rulemaking procedures to amend FAR 137 concerning aerial application of pesticides. (The Environmental Protection Agency has also been petitioned to change its policies and procedures regarding labeling and enforcement activities in aerial application of pesticides.) *Friends of the Earth* is seeking to prevent inadvertent contamination of areas adjoining application sites. FAA has asked for public comment on the petition by April 17, 1980.

Current FAR Part 137 regulations concerning pesticides apply primarily to aircraft and pilot qualifications, but they also require that pesticides be applied in such a manner as to avoid hazards to people and property.

Friends of the Earth wants regulatory changes which would require pilots to obtain written permission before spraying within 1,000 feet of a person or property not included in the spray contract, written testing of aerial applicators before they can go into business, and an increase in the size of aircraft registration numbers so that violators can be turned in.

Comments should be sent to FAA, Chief Counsel, AGC-24, Docket No. 19448, 800 Independence Ave., S.W., Washington, DC, 20591. Copies of the petition are available from FAA, APA-430, same street address.

• Over-Eager ELT

I was flying in calm air recently when my ELT suddenly triggered for no apparent reason, swamping the whole VHF band and making ATC communications impossible. This is not healthy, especially in congested areas or instrument conditions. Question: Are there regulations governing ELT transmitting bandwidth? If so, are they under the jurisdiction of FAA or FCC?

Alfred B. Chan
San Mateo, CA

Regulations governing ELT specifications are found in FAR 37.200. The ELT is required to transmit only on the emergency frequencies—121.5 MHz civilian and 243.5 MHz military. The inadvertant transmission may have garbled your ability to receive while other aircraft were not affected.

Every civilian transmitter in the U.S. comes under the direction of the FCC, but in the case of ELT's, FAA and FCC have joint jurisdiction.

If the remote switch was not inadvertantly turned on, that ELT needs a quick checkup. (See photo.)

• Survival Training for Pilots

I was very interested in your article on "Post Crash Survival" in the Nov/Dec 1979 issue. No matter how safe we are as pilots, accidents are still going to happen, and since not all of us are Eagle Scouts, we could use survival training even if it were never personally needed. Does FAA sponsor any survival training seminars similar to the safety seminars of the Accident Prevention Program?

June Hanson
Edgewood, MD 21040

Some FAA district offices in the mountain or desert areas and in the Pacific and Alaskan regions sponsor pilot survival training sessions periodically. Contact the office in your area for the nearest program.

• The Black Foothills?

I enjoyed "Appalachian Scud Running" (July/August 1979) also, but on the Cheyenne Sectional I found Harney Peak at 7,242 feet and Bear Mountain nearby at 7,240 feet, both of which are taller than Mt. Mitchell, allegedly tallest outside the Rockies.

Robert Henry
Newcastle, WY

Harney Peak and Bear Mountain are part of what is popularly known as the Black Hills, usually considered part of the Rocky Mountain "foothills."

Suppose we say Mt. Mitchell at 6,684 feet is the highest peak east of the Mississippi River?

• Engine Extinguishers

The airplane used for aerial photography for my company recently underwent the following experience: After refueling at our local base of operations, as the pilot started the engine to taxi away from the fuel pumps, an exhaust fire started. The pilot shut everything down correctly, and a line-boy used a dry chemical extinguisher to put out the fire that had spread over the cowling. During subsequent repairs a few days later, it was found that chemical corrosion had begun almost immediately. Engine mounts, parts, inside the cowl, and cowl flap hinges were all affected, and we are wondering if any chemical from the extinguisher was sucked into the engine intake.

We have tried every cleaning procedure recommended but the corrosion keep spreading, necessitating continual replacement of affected parts. We didn't realize that the chemical should have been cleaned off immediately (or within 12 hours). The cost of repairs and the downtime of the aircraft has been very expensive, and I just wanted to warn others about corrosion from dry chemical fire extinguishers.

Joseph A. Dileo
Silver Spring, MD

Thanks for a word from the wise. The chemical manufacturer may be able to suggest the best way to remove harmful residue so that continuing repairs can be avoided.

• Measuring Flight Time

Regarding the letter on "Tach Time or Hobbs Time?" in the Nov/Dec 1979 "Forum" the oil pressure actuated Hobbs meter on my airplane registers 20% less than an electonic timing device activated by an air switch—which always registers the same elapsed time as my wrist watch. Which should be used to measure "block to block" time?

Irving M. Fogel
New York, NY

Regulations refer to flight time as "block to block" time but do not specify how to measure it. Use whichever way you wish.

• Density Altitude, Personal Oxygen

What I read in *General Aviation News* about density altitude (November/December 1979 "Forum") doesn't square with what I read in another publication. You say that the body responds to pressure altitude, not density altitude, but I read elsewhere that density altitude is what your personal oxygen system feels. How about telling us where your information came from and why the discrepancy?

James M. Thoburn
Rochester, NY

According to the Federal Air Surgeon, pressure altitude (not density altitude) affects human consumption of oxygen. The reduction of atmospheric pressure that occurs with increased altitude prevents oxygen from being "pushed" across lung membranes and into the blood when air is inhaled, leading to hypoxia at altitudes above 10,000 feet. But the density of the air has no effect on the pressure required to absorb oxygen. Density does affect aircraft, because it alters the fuel/air ratio and provides less lift (but also less drag).

• Gobbling the Gook

I wish to commend your publication on the clarity and simplicity of the English language that it has employed in *FAA General Aviation News*. It has provided me with reassurance that "administratese" has not infected all government writing.

David M. Simon
Princeton, NJ

The mission of this publication is to serve the aeronautical industry by elucidating and delineating various regulatory, technical, and operational nomenclature without superfluous verbiage and with a proclivity for the simplistic.

In other words, right on!

FAA GENERAL AVIATION NEWS welcomes comments from our readers. No anonymous letters will be used, but names will be withheld on request. Address: FAA GENERAL AVIATION NEWS, AFS-807, Washington, D.C. 20591.

• Who's Counting?

I always look forward to reading *FAA General Aviation News*. However, all the questions lately about logging flight time got me wondering about some of these self-professed 35,000- and 40,000-hour pilots. For example, a pilot 53 years old who stated he had 40,000 hours: If he'd gotten his license at 15, he would have had to fly four hours every day for the last umpteen years, no time for vacations, no sickness, no unserviceable aircraft, no bad weather. It doesn't seem possible, does it?

John Doster
Allentown, PA

Flying 4 hours a day, everyday, you could accumulate 40,000 hours in about 28 years. An instrument rating would permit you to fly in all types of weather. For air carrier flying, of course, you are limited to 30 duty hours of flight within a span of seven consecutive days—a little more than four hours per day. For the retired airline caption, 30,000-plus hours is not an unusual claim, and such totals presumably could be authenticated by interested persons.

In general aviation, flight time is required to be logged only during instruction or in preparation for a certificate: All other time claims are as reliable as the pilot's integrity.

Anyone want to put in a claim for most hours?

• Estimating Cloud Bases

In "Ask the Weatherman" in the July/August 1979 issue, as I read the answer to the question on how to estimate the altitude of a cloud base, I was wondering whether it wouldn't be more advantageous to multiply the temperature/dewpoint spread by 400 to obtain the cloud base in feet or by 122 to obtain it in meters. Division of the spread value does not make sense to me.

Olaf-Georg Issinger
Stuttgart, Germany

Dividing by four gives you a more conservative figure. For example, 25° C temperature, 15° C dewpoint gives a spread of 10° C. Dividing by four gives 2.5 or 2,500 feet for the base of the clouds. Multiplying 10° C by 400 would give 4,000 feet. We prefer to take the lower value rather than run the risk of overestimating the bases and getting caught between the cloud and a hard place.

INSTRUMENT CORNER

• Missed Approach Point

The profile view of the ILS in the explanatory section of the Instrument Approach Procedure volume shows the Missed Approach Point (MAP) at the Middle Marker (MM), and for any given ILS approach the Missed Approach Track is shown as beginning here. Yet the small table on the approach plate beneath the airport diagram gives the distance from the Final Approach Fix to the Missed Approach Point as the distance from the FAF to the runway threshold. Which is the Missed Approach Point—the middle marker or runway threshold?

Dr. Cyril Toker
Potomac, MD

It depends. For an ILS approach, MAP is in the vicinity of the middle marker, and the distance shown in the table is from the outer marker to the middle marker. For an NDB, LOC, or VOR approach, the MAP is the runway threshold, and the distance in the table is from the FAF to the threshold.

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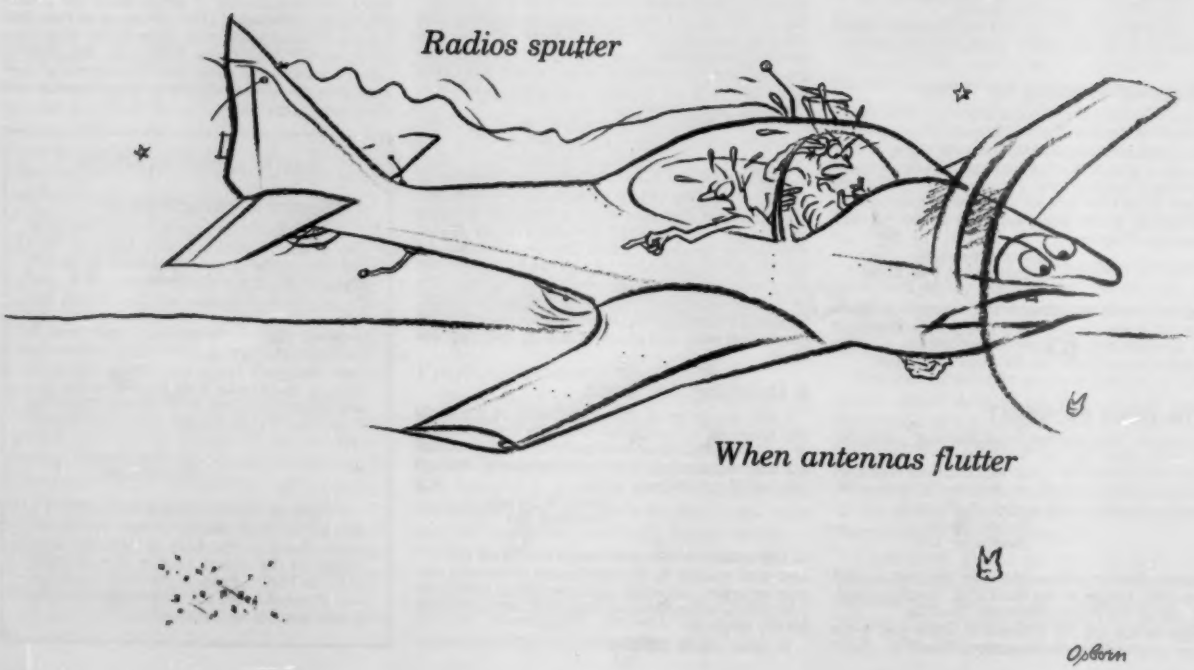
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